



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Kenneth Rhodes *et al.*

Serial No.: 09/670,756

Filed: September 27, 2000

For: *POTASSIUM CHANNEL INTERACTORS AND USES THEREFOR*

Attorney Docket No.: MNI-070CP4

Group Art Unit: 1646

Examiner: Murphy, Joseph F.

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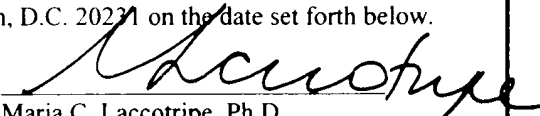
Commissioner for Patents  
Office of Initial Patent Examination  
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Certificate of First Class Mailing

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May 2, 2002  
Date of Signature and of Mail Deposit

By:

  
Maria C. Laccotripe, Ph.D.  
Attorney for Applicants  
Limited Recognition Under 37 C.F.R.  
§10.9(b)

**RESPONSE TO "RESPONSE TO REQUEST FOR CORRECTED FILING RECEIPT"**

Dear Sir:

This is a response to the "Response to Request for Corrected Filing Receipt" mailed from the United States Patent and Trademark Office on April 15, 2002.

**REMARKS**

The Response to Request for Corrected Filing Receipt states that

Continuity claimed under 35 U.S.C. 120 cannot be added to the Filing Receipt without the applicant supplying the relationship (continuation, divisional, or continuation-in-part) in an Application Data Sheet or amendment to the first page of the specification.

Applicants provide herewith a copy of the first page of the specification, as filed, which sets forth the priority documents and their relationship to the instant

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application, as well as a copy of the Continuation Application Transmittal which indicates that the instant application is a "continuation-in-part of the pending prior application serial no. 09/399,913, filed on September 21, 1999 entitled POTASSIUM CHANNEL INTERACTORS AND USES THEREFOR."

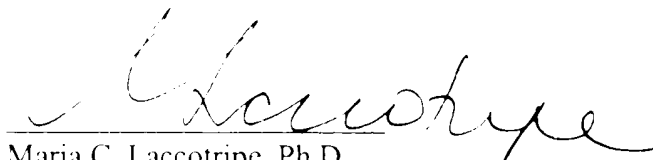
Accordingly, Applicants request that the priority information on the Official Filing Receipt be corrected such that it reads as follows:

**THIS APPLICATION IS A CIP OF 09/399,913 09/21/1999  
WHICH CLAIMS BENEFIT OF 60/110,033 11/25/1998  
AND CLAIMS BENEFIT OF 60/109,333 11/20/1998  
AND CLAIMS BENEFIT OF 60/110,277 11/30/1998  
AND CLAIMS BENEFIT OF 09/298,731 04/23/1999  
AND CLAIMS BENEFIT OF 09/350,614 07/07/1999  
AND CLAIMS BENEFIT OF 09/350,874 07/09/1999  
AND CLAIMS BENEFIT OF 09/400,492 09/21/1999**

#### SUMMARY

If a telephone conversation with Applicants' Attorney would expedite the prosecution of the above-identified application, the Examiner is urged to call Applicants' Attorney at (617) 227-7400.

Respectfully submitted,



Maria C. Laccotripe, Ph.D.

Attorney for Applicants

Limited Recognition Under 37 C.F.R. §10.9(b)

ALLIANCE & COMPANY, P.C.  
State Street  
Boston, MA 02109  
Tel. (617) 227-7400

Dated: May 2, 2002



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS  
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UNITED STATES PATENT

| APPLICATION NUMBER | FILING DATE | FIRST NAMED APPLICANT | ATTY DOCKET NO./TITLE |
|--------------------|-------------|-----------------------|-----------------------|
| 09/670,756         | 09/27/2000  | Kenneth Rhodes        | MNI-070CP4            |

CONFIRMATION NO. 6507

000959  
LAHIVE & COCKFIELD  
28 STATE STREET  
BOSTON, MA 02109



\*OC000000007867357\*

Date Mailed: 04/15/2002

RESPONSE TO REQUEST FOR CORRECTED FILING RECEIPT

Domestic Continuity and Foreign Priority

In response to your request for a corrected Filing Receipt, the Office is unable to comply with the request because:

- ☐ The priority or continuity claim has not been entered because it was not filed during the required time period. Applicant may wish to consider filing a petition to accept an unintentionally delayed claim for priority. See 37 CFR 1.55 or 1.78.
- ☒ Continuity claimed under 35 USC 120 cannot be added to the Filing Receipt without the applicant supplying the relationship (continuation, divisional, or continuation-in-part) in an Application Data Sheet or amendment to the first page of the specification.
- ☐ A claim for priority cannot be made based on an application filed after the application making the claim.
- Domestic and foreign priority claims will not be captured in a provisional application. A provisional application may claim the benefit of a non-provisional application, but not the benefit of any other application. See 35 USC 111(b)(7) and 37 CFR 1.53(c)(4).
- ☐ A domestic continuity claim cannot be made to a foreign application and the filing receipt will only list the foreign country, application number, and filing date.

Foreign priority will appear on the Filing Receipt in the following order

|  |
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☐ Country, Application number, Filing date.

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LAHIVE  
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COUNSELLORS AT LAW  
28 STATE STREET  
BOSTON, MASSACHUSETTS 02109-1784  
TELEPHONE (617) 227-7400  
FAX (617) 742-4214  
lc@lahive.com

JOHN A. LAHIVE, JR. (1928-1997)  
THOMAS V. SMURZYNSKI  
RALPH A. LOREN  
GIULIO A. D'CONTI, JR.  
ANN LAMPORT HAMMITTE  
ELIZABETH A. HANLEY  
AMY BAKER MANDRAGOURAS  
ANTHONY A. LAURENTANO  
KEVIN J. CANNING  
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DANN FORAN SMITH  
PETER C. LAURO  
JEANNE M. DIGIORGIO  
DEBRA J. MILASINCIC, Ph.D.  
DAVID J. RIKKERS  
DAVID R. BURNS  
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SEAN D. DETWEILER

CYNTHIA L. KANIK, Ph.D.  
MEGAN E. WILLIAMS, Ph.D.  
RICHANAND  
MICHAEL PHILLIPPS\*  
LISA M. DIROCCO  
HATHAWAY P. RUSSELL\*\*  
MARIA LACCOTRIPE ZACHARAKIS, Ph.D.  
PETER A. DIMATTIA  
VINCENT P. LOCCISANO  
MERIDETH C. ARNOLD

SENIOR COUNSEL  
JAMES E. COCKFIELD

OF COUNSEL  
JEREMIAH LYNCH  
WILLIAM A. SCOFIELD, JR.  
SIBLEY P. REPPERT

PATENT AGENTS  
THEODORE R. WEST  
SHAYNE Y. HUFF, Ph.D.  
DANIEL B. KO

TECHNICAL SPECIALISTS  
CYNTHIA M. SOROOS  
PETER W. DINI, Ph.D.  
EUIHOON LEE  
JENNIFER K. ROSENFELD  
ALLAN TAMESHTIT, Ph.D.  
CATHERINE E. McPHERSON  
ERIC F. WAGNER, Ph.D.  
SHAHID HASAN, Ph.D.  
JACOB G. WEINTRAUB  
JONATHAN M. SPARKS, Ph.D.  
CRISTIN E. HOWLEY, Ph.D.

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RE: U.S. Continuation-In-Part Patent Application No. 09/670,756  
Title: *POTASSIUM CHANNEL INTERACTORS AND USES THEREFOR*  
Filed: September 27, 2000  
Inventors: Kenneth Rhodes, Maria Betty, Huai-Ping Ling,  
and Wenqian An  
Our Reference No.: MNI-070CP4

Dear Sir:

I enclose herewith for filing in the above-identified application the following:

1. Response to Response to Request for Corrected Filing Receipt (2 pages);
2. Copy of Response to Request for Corrected Filing Receipt;
3. Copy of the First Page of the Specification;
4. Copy of Continuation-in-Part Transmittal Letter;
5. Statement of Limited Recognition Under 37 CFR §10.9(b) for Maria C. Laccotripe; and
6. Return mailroom postcard.

Please charge any necessary fees to our Deposit Account No. 12-0080. The undersigned requests any extensions of time necessary to respond. A duplicate of this sheet is enclosed.

I hereby certify that this correspondence is deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Office of Initial Patent Examination, Customer Service Center, Washington, DC 20231 on:

May 2, 2002  
Date  
  
Maria C. Laccotripe, Ph.D.

Respectfully submitted,

LAHIVE & COCKFIELD, LLP

Maria C. Laccotripe, Ph.D.  
Limited Recognition Under 37 CFR §10.9(b)  
Attorney for Applicants

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**BEFORE THE OFFICE OF ENROLLMENT AND DISCIPLINE  
UNITED STATE PATENT AND TRADEMARK OFFICE**

**LIMITED RECOGNITION UNDER 37 CFR § 10.9(b)**

Maria C. Laccotripe is hereby given limited recognition under 37 CFR §10.9(b) as an employee of Lahive & Cockfield, LLP, to prepare and prosecute patent applications where the patent applicant is the client of Lahive & Cockfield, LLP, and the attorney or agent of record in the applications is a registered practitioner who is a member of the Lahive & Cockfield, LLP. This limited recognition shall expire on the date appearing below, or when whichever of the following events first occurs prior to the date appearing below: (i) Maria C. Laccotripe ceases to lawfully reside in the United States, (ii) Maria C. Laccotripe's employment with Lahive & Cockfield, LLP ceases or is terminated, or (iii) Maria C. Laccotripe ceases to remain or reside in the United States on an H-1 visa.

This document constitutes proof of such recognition. The original of this document is on file in the Office of Enrollment and Discipline of the U.S. Patent and Trademark Office.

**Expires: September 4, 2002**

A handwritten signature in black ink, appearing to read "Harry I. Moatz", written over a horizontal line.

Harry I. Moatz

Director of Enrollment and Discipline

Customer No. 000959

Case Docket No. MNI-070CP4

THE ASSISTANT COMMISSIONER FOR PATENTS  
Box Patent Application  
Washington, DC 20231



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Date of Deposit: September 27, 2000

I hereby certify that this transmittal letter and the papers referred to as being enclosed therein are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

Nelson Barros  
Signature  
Nelson F. Barros  
Please Print Name of Person Signing

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Sir:

Transmitted herewith for filing is the continuation-in-part patent application of

Inventor(s): Kenneth Rhodes, Maria Betty, Huai-Ping Ling, and Wenqian An

For: **POTASSIUM CHANNEL INTERACTORS AND USES THEREFOR**

Enclosed are:

☒ This is a request for filing a ☒ continuation-in-part ☐ divisional application under 37 CFR 1.53(b), of pending prior application serial no. 09/399,913, filed on September 21, 1999 entitled POTASSIUM CHANNEL INTERACTORS AND USES THEREFOR.

☒ 148 pages of specification, 14 pages of claims, 1 page of abstract.

☒ 48 sheets of formal drawings (Figures 1-43).

☒ An unexecuted Declaration, Petition and Power of Attorney.

☒ 92 pages of sequence listing (numbered 1-92).

☒ Transmittal Letter for Diskette of Sequence Listing.

☒ Diskette Containing Sequence Listing.

☒ Statement of Limited Recognition Under 37 C.F.R. §10.9(b)

The filing fee has been calculated as shown below:

|   | (Col. 1)             | (Col. 2)  |
|---|----------------------|-----------|
| FOR:  | NO. FILED            | NO. EXTRA |
| BASIC FEE   | //////////////////// |           |
| TOTAL CLAIMS  | 54- 20               | =34       |
| INDEP. CLAIMS   | 2 - 3                | =0        |
| <input checked="" type="checkbox"/> MULTIPLE DEPENDENT CLAIMS PRESENTED |                      |           |

\* If the difference in Col. 2 is less than zero.

| SMALL ENTITY |          | OR | OTHER THAN SMALL ENTITY |           |
|--------------|----------|----|-------------------------|-----------|
| RATE         | FEE      |    | RATE                    | FEE       |
| ////////     | \$345.00 | OR | ////////                | \$690.00  |
| x 9=         | \$       | OR | x 18=                   | \$612.00  |
| x 39         | \$       | OR | x 78                    | \$        |
| +130         | \$       | OR | +260                    | \$260.00  |
| TOTAL        | \$       | OR | TOTAL                   | \$1562.00 |

Please charge my Deposit Account No. \_\_\_\_\_ the amount of \$\_\_\_\_\_  
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☒ **FILING FEES ARE NOT BEING PAID AT THIS TIME.**

☐ A check in the amount of \$\_\_\_\_\_ to cover the filing fee is enclosed

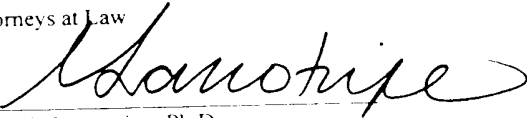
☐ The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. \_\_\_\_\_  
A duplicate copy of this sheet is enclosed

- ☐ Any additional filing fees required under 37 C.F.R. 1.16
- ☐ Any patent application processing fees under 37 C.F.R. 1.17
- ☐ The Commissioner is hereby authorized to charge payment of the following fees during the pendency of this application or credit any overpayment to Deposit Account No. \_\_\_\_\_  
A duplicate copy of this sheet is enclosed
- ☐ Any patent application processing fees under 37 C.F.R. 1.17
- ☐ The issue fee set in 37 C.F.R. 1.18 at or before mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).
- ☐ Any filing fees under 37 C.F.R. 1.16 for presentation of extra claims.
- ☐ A check in the amount of \$ \_\_\_\_\_ to cover the recording of assignment documents is also enclosed.
- ☒ Address all future communications (May only be completed by applicant, or attorney or agent of record) to Any E. Mandragouras at **Customer Number: 000959** whose address is:

Lahive & Cockfield, LLP  
28 State Street  
Boston, Massachusetts 02109

Date: September 27, 2000

LAHIVE & COCKFIELD, LLP  
Attorneys at Law

By   
Maria C. Laccotripe, Ph.D.  
Agent for Applicants  
Limited Recognition Under 37 C.F.R. §10.9(b)  
28 State Street  
Boston, MA 02109  
(617) 227-7400  
Telecopier (617) 742-4214



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Attorney Docket Number: MNI-070CP4

**POTASSIUM CHANNEL INTERACTORS AND USES THEREFOR****Related Applications**

- This application claims priority to U.S. provisional Application No. 60/110,033, filed on November 25, 1998, U.S. provisional Application No. 60/109,333, filed on November 20, 1998, U.S. provisional Application No. 60/110,277, filed on November 30, 1998, U.S. Patent Application No.: 09/298,731, filed on April 23, 1999, U.S. Patent Application No.: 09/350,614, filed on July 9, 1999, U.S. Patent Application No.: 09/350,874, filed on July 9, 1999, U.S. Patent Application No.: 09/399,913, filed on September 21, 1999, U.S. Patent Application No.: 09/400,492, filed on September 21, 1999, and PCT Application No. PCT/US99/27428, filed on November 19, 1999, incorporated herein in their entirety by this reference.

**Background of the Invention**

- Mammalian cell membranes are important to the structural integrity and activity of many cells and tissues. Of particular interest in membrane physiology is the study of trans-membrane ion channels which act to directly control a variety of pharmacological, physiological, and cellular processes. Numerous ion channels have been identified including calcium, sodium, and potassium channels, each of which have been investigated to determine their roles in vertebrate and insect cells.

- Because of their involvement in maintaining normal cellular homeostasis, much attention has been given to potassium channels. A number of these potassium channels open in response to changes in the cell membrane potential. Many voltage-gated potassium channels have been identified and characterized by their electrophysiological and pharmacological properties. Potassium currents are more diverse than sodium or calcium currents and are further involved in determining the response of a cell to external stimuli. The diversity of potassium channels and their important physiological role highlights their potential as targets for developing therapeutic agents for various diseases.

The voltage-gated potassium channels are the voltage-gated potassium channels. The prototypical member of this class is the protein encoded by the Shaker gene in *Drosophila melanogaster*. Proteins of the Shal or Kv4 family are a type of voltage-gated potassium channels that underlies many of the native A type currents that have been recorded from different primary cells. Kv4 channels have a major role in

